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PAARA

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Graphs



palo alto
AMATEUR
RADIO ASSN.

MENLO PARK C.D. RADIO CLUB, K6YQT



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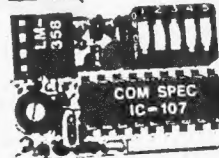
TE-64



TS-32



SS-32



PAARagraphs is the official organ of
The Palo Alto Amateur Radio Association & the Menlo Park Civil Defense Radio Club

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Membership in PAARA is \$6.00 per calendar year (payable in January), which membership includes a subscription to PAARagraphs. Freebee distribution to those who indicate an interest in the Club and as an inducement to their becoming members, and is subject to change with changing interests in the Club. Make payment to: PAARA, P.O. Box 911, Menlo Park, CA 94025.

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Written contributions to the P.O. Box above, or to the Editor, 1140 Sherman Avenue, Menlo Park, CA 94025. Deadline is two or three days after the Board of Director's meeting.

Friday, February 5, 1982

7.30 pm

R E G U L A R M E E T I N G

NIUE DX-EDITION

by

Ron Panton, W6VG

(Niue is So. of Samoa & East of Tonga, per N6CHL)

Come and find out why they went, how they got there, what they did, and if they all came back!

Future meetings: March 5, 1982; April 2, 1982.

Circle the Date.

February 5, 1982

PRESIDENT'S CORNER: My teletype effort was a flop. Only three people were interested. The owner notified me that the balance had been sold for parts. Apparently, those that are breaking into this form of communication are going for terminals or home computers. My thanks to WA6WBEQ for the good talk on RTTY, ASCII, etc. I hope to find a willing delegate to the Pacific Division Conference in Dublin (that's Calif., George) on the 30th of January. Keep your eyes open for a Spring Party at Huddart Park. Please pursue any leads you might have on potential speakers or let me follow up on them (or Kevin, WA6FHC).

We like to stay two or three months ahead on speakers, so every lead is important. If anyone has a suggestion on a field day expedition, radio station trip, etc., throw that in the hopper as well. Come to the February meeting for a change and hear PAARA's very own Ron Panton, W6VG, present a talk and slides on the latest Dx-expedition.

de WA6LNV

The club meeting of Jan. 8, 1982 was held in the Menlo Recreational Center, with a few less attendees than usual, occasioned no doubt, by the shift in date to the second Friday.

John KD6ZL submitted the Troop 599 report. The equipment enclosure and the Sky-line repeater site are now arranged, thanks to Palo Alto and Bill WB6IYS, who played a major role in all this. The crying needs of 599 are now a low level spot in the flatlands for their 2 meter repeater site, and a new clubhouse. When the new scouts are recruited, they will be placed in a novice license class.

President Tucker WA6LNV, in a rare moment of humility, solicited constructive criticism of PAARA's activities or the lack of same, plus help on the publications of PAARAGRAPHS. Pictures are welcome, he said, and Fred K6YT then volunteered the news that the pictures he had taken at the Christmas party were out of focus. The pictures, however, seemed quite clear, leading to another conclusion. Fred then

announced that badges were unclaimed by what sounded like KA6KJP, WB6CNI, and N6DJN. He proposes ordering badges at the January, April, July and October meetings; pay \$2.75 to the Treasurer and he will put the order through.

Our President ended the badge dialog with an announcement that a picnic is planned in late April or early May; keep all these dates "open", he said. Fred K6YT was in Santa Cruz during the great deluge of 1982, and told of the telephone side of the disaster. The Soquel Creek flood cut the main telephone lines, and that, plus thousands of unnecessary calls, put the system out of operation for days.

Andy VE3FZK, apparently having heard Fred's words but not their import, proudly related his own breaks! on two meters, attempting to have some rescue workers in Aptos find a fellow ham's social security number so he could have access to Edwards A.F. Base. If this reminds you of the use of a presidential plane to deliver a dog, there is really no connection.

This lead to our speaker of the evening, Ron Rueter, who brings home the buns and coffee via Teledyne MEC, where he is a project engineer. Ron's true love is radio teletype, which was the subject of his excellent talk.

In 1906, two inventors with the unlikely names of Morton and Crumb developed the first teletype machine; Kleinschmidt started teleprinters in 1915; and the Teletype Corp. (Trademarked) put out TWX in 1925.

Hams took over war surplus equipment and filled 2 and 80 meters with the unpleasant sounds which still persist.

Ron then submitted statistics on emergency message handling, with CW winning at a net of 20 words per minute versus 15 wpm on teletype and only 10 wpm on voice. (Steve K6FS take note.)

A comprehensive and enjoyable overlook of the equipment available, manuals to purchase and techniques finished out Ron's talk, and although his other avocation is as auctioneer for West Valley's auctions, we are not sure any PAARA members were swayed to go out and buy one of these devices, space and wives being what they are. However, we all did learn that RTTY is pronounced "RITTY", which makes us part of the group.

On Wednesday, Jan. 13, President Tucker WA6LNV called the Directors meeting to order at 7:30 p.m. in the freezing club trailer. Freezees included, in addition to the chair, Alan W6UVP, Ed W6AIN, Wally K6URO, Bill KA6LZI, George G13OEN, Kevin WA6FAC, Alan WA6AZP, and Gerry W6NIR.

Despite presidential urgings, no one volunteered to accompany Steve K6FS to the coming ARRL convention.

The speaker for the next meeting will be Ron W6VG, who went on and will narrate the recent NIUE Dx expedition, on which Cam. K6RU was a participant.

Following discussion of future programs, the status of Troop 599 and devices to enliven the Monday net on 147.45 mhz, the meeting was nearly adjourned, but not before a motion unanimously carried authorizing Fred K6YT to purchase up to \$90.00 of coax cable to feed super 80 meter twin verticals for the next field day.

Wanted

In analyzing the need to revitalize the PAARA 2 meter net, we found that four of our officers-directors themselves lack 147.45 mhz capability. Have you any surplus crystals in your trading locker? Two of our leaders have respectively a TR-22C and TR-2200. The transmit crystal frequency is operating frequency divided by 12 (12287 mhz or so for 147.45); receiving operating frequency minus 10.7, then divide by 3 (45583.3 mhz for 147.45). The holders are HC25U (pea size).

Warning

The press reports that recently New York State's biggest ham swap meet was demoralized and all went home when the State T-men raided the place, seeking collection of sales tax on all transactions and demanding possession of resale permits by each vendor.

MIXED EMOTIONS: Fred, K6YT, went through the mother-in-law driving my new Cadillac over the cliff syndrome recently when he received the news that our perennial and efficient novice of past field days, Paul Thekan, now WA6LJP, had gone up to the FCC office for "experience" and passed the extra class license test with flying colors.

It's thus: Field Day results in QST disclosed that our Texas competition listed 500 contacts on cw by their novice station, a disturbing statistic. Our own novices are upgrading too quickly; we need seasoned cw men for the novice tent. Now there is no way to reverse the process. We cannot downgrade Paul, WA6LJP or Swede, N6 GHL.

But perhaps we should look to the future. It's the problem of the impossible dream: every boy and girl to go to college, languish for four or more years in the ivy halls, and come out with the illusory importance of a sheepskin degree. Now the answer should not be physical: we cannot make perennial sopranos out of our new crop of novice choristers, but there is another way that Fred should consider.

Encourage our novices in cw practice, consider a series of bugs for raffle prizes. Then, Fred, we'll create a BASH course in reverse. Provide the novices with completely false answers in a crash course sponsored by the club for the general exam. If your conscience bothers you, we believe that we have a member or two who can provide such answers without remorse, logical selectees as course instructors. This will create a splendid reservoir of novice talent, generating more and more June points as the years pass by. (Bill, KA6LZI, is not to read this article; editor, excise it from his copy) (Can't! Ed.)

MYSTERY AILMENT: Erv, W6YPM, father of the KWIK PATCH, has been plagued for many months with recurrent failure of receiver front ends in his Collins S-line. One day he actually saw the flash when some errant voltage zapped his transistors. The only appliance then on in the radio shack was his emergency 12 volt auto battery for the 2 metre transceiver, and the battery charger keeping it up to 12 volts, the same condition in all previous receiver failures.

We anxiously await confirmation by Erv that this was the trouble, and all want to know how it happened.

OFFERS: A silent key, recently passed on, left a mint Wilson TT-45B tubular, self-supporting, retractable 45 ft. tower for sale in his estate. PAARA is assisting in the sale; it is available for inspection at the PAARA trailer. Now, these great towers are listed at \$409.50 plus tax and freight. How about a bid of around \$300 for this one? Call a PAARA officer for details.

(Gerry Wagstaffe, W6NIR is a very retiring person when it comes to signing the articles that he writes. In fact, he wrote all the articles so far, with the exception of Gerry Tucker's President's Corner. Ed.)

GEO-STATIONARY SATELLITES: Some PAARA members may be aware that in the October, 1945, issue of the magazine, Wireless World, the well-known engineer and science fiction writer, Arthur C. Clarke, put forward a completely new idea in broadcasting and communications: that transmitters could be carried on artificial satellites of the Earth and thereby achieve excellent coverage with low power very efficiently. This was 12 years before the first artificial satellite carrying a radio transmitter (Sputnik), 17 years before the first communications satellite (Telstar) and some 30 years before the first experimental broadcasting satellites.

What was remarkable about Clarke's article was that it gave the exact conditions for putting a satellite into a geo-stationary orbit, in which the satellite revolves at the same rate as the Earth and so remains stationary over a given spot on the Earth's surface. When the first geo-stationary satellites were actually launched in the mid 1960's, they proved Clarke's prediction to be absolutely correct. In recognition of this brilliant piece of theoretical work, Clarke has received awards and honours from all over the world.

Over the years, Wireless World has been continually asked for reprints and in their October, 1981 issue, they included a reprint of the original article.

Any persons interested in receiving a copy of this reprint should write to: IFC Business Press Ltd., Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, England.

GI reminiscences: As many of you know, your Editor has been bringing his old British radio mags to the club meetings for any interested party to take. The advertising sections of these magazines have prompted the comment by many people that it seemed that only Japanese equipment was sold and used over there.

Having answered this question orally several times, I thought that I would write down the answer and refer any future questioners to the February, 1982 PAARagraphs.

Firstly, I came to the United States in January, 1971, and before that time, there was no significant amount of Japanese amateur radio equipment sold or used in Britain. The present market dominance of the Japanese manufacturers has been achieved in the last ten years and is a tribute to their marketing and manufacturing abilities.

Eddystone is a well-known manufacturer of amateur radio receivers, as well as merchant navy receivers, many of which are in amateur use.

Labgear is a branch of the Pye group of companies and made several popular transmitters.

Several companies made equipment for the merchant navy which ended up in amateur hands. The Marconi receiver CR100 and the early Racal receivers are in common use by amateurs. Other predominantly merchant navy equipment manufacturers are Pye Marine, and the International Marine Radio Company. It should be remembered that Britain has a large merchant navy and that many amateurs are present or one-time marine operators.

Other smaller companies, many now merged or defunct, which manufactured amateur radio equipment, were Panda, which made a nice transmitter, the Panda Cub; Denco, which made a nice receiver, the Q-Max; and Bush; Murphy; McMichael; Ferguson and Baird; all separate companies.

Sizable amounts of U.S. surplus was sold off in Britain and the National HRO, the BC348 and the RCA AR88 are the most popular of the U.S. surplus. All of these receivers are quite adequate for CW even today and are still in use.

There were many pieces of British surplus available, much of which has now been retired. Few of the receivers used crystal filters, which is a handicap on today's CW bands. The most popular item was the R1155 aircraft receiver.

The Secret Service had its own equipment, and, for presumably sentimental reasons, their surplus is in demand. The commonest set was the B2 Tx/Rx, a suitcase set, as were most of their equipments. I had one of those during the period in the 1960's when I did a lot of travelling, and as I operated it, it was easy to visualize a grimy agent, in beret and black leather jacket, sending his message from an attic in Paris while the Nazi df vans circled around. Incidentally, many pre-war British amateurs were taken into the Secret Service, either as agents or the older ones to monitor German spy transmissions for code-breaking purposes. There was a Secret Service monitoring station in Northern Ireland for monitoring German spy transmissions from the Republic of Ireland (Eire) for, being a neutral country during World War II, German spies in Britain would send their communications via the Republic of Ireland.

One last receiver that is in common use in Britain is the G2DAF. This was a seminal design for home construction and many were built. It represented a quantum jump in standards at the time of first publication.

NOSTALGIA CORNER: "It's a wonderful hobby - radio. I can't recommend it too highly. A normal lad can build himself a receiver for as little as \$10 and a transmitter for only \$25. If he uses the right frequencies he can cover a good part of the world with such a rig." A 1956 quote from the late John L. Reinartz, K6BJ, one of the great pioneers of "short waves" in the 1920's.

Sometimes, it seems that any lad who builds his own receiver and transmitter nowadays would not classed as normal.

What can we do about it?

TUNE IN TO KMAH: Menlo Park citizens can hear City Council meetings on Tuesday evenings at 7:30 pm over KMAH-FM at 89 on the dial.

The radio station has recently increased its power and is provided with an emergency generator power source to give local information should a civil disaster occur in our area.

In case of a widespread disaster, we will probably be on our own for the first 24 to 48 hours, so you are encouraged to have a battery-operated radio available.

KMAH is also asking for financial help from the community, and your tax-deductible contributions can be sent to: KMAH-FM, 555 Middlefield Road, Atherton, CA 94025.

LETTER FROM DAVID HARPER:
Happy Holidays

Hope 1981 was as good for you as it was for me.

This will be my second Christmas in Deer Park. We are again hoping to have a white Christmas. However, like last year we will probably not have a lot of snow. (I think your wish was granted, Dave. Ed.) Christmas last year was like a Currier & Ives picture. We spent Christmas Day with my sister and her family. New

The following beam headings are predicated on a San Francisco Bay area QTH but are valid for any QTH within 50 miles or so. The headings are TRUE headings. To get this in northern California, add 17° to your COMPASS beam heading to get TRUE heading. Your beam SHOULD be aligned to TRUE north! That means it's pointing to TRUE north when it is pointing to a COMPASS heading of 343°. ALL beam headings are always based on TRUE north, not MAGNETIC north. Call us if you need help on understanding this. Good DXing and contesting! If you need help upgrading, we're the best in the business.

BEAM HEADINGS

LOCATION	HEADING	LOCATION	HEADING	LOCATION	HEADING
Afganistan - Kabul	350	Ghana - Accra	065	New Zealand - Auckland	226
Algeria - Algiers	041	Greece - Athens	026	Christchurch	222
Angola - Luanda	066	Greenland - Thule	015	Dunedin	221
Antarctica - McMurdo	154	Haiti - Port au Prince	100	Wellington	223
Argentina - Buenos Aires	132	Holland - see Netherlands		Nicaragua - Managua	119
Australia - Adelaide	245	Hong Kong	308	Nigeria - Lagos	062
Brisbane	245	Iceland - Reykjavik	030	Oman - Muscat	359
Darwin	269	India - Bombay	343	Pakistan - Karachi	351
Melbourne	240	Calcutta	329	Panama - Panama City	116
Perth	242	Delhi	341	Peru - Lima	130
Sydney	240	Madras	333	Philippines - Manila	298
Bahamas - Nassau	095	Indonesia - Jakarta	292	Pitcairn Island	188
Belgium - Brussels	031	Iran - Tehran	005	Poland - Warsaw	022
Bermuda - Hamilton	079	Iraq - Baghdad	011	Portugal - Lisbon	047
Bolivia - La Paz	127	Ireland - Dublin	034	Puerto Rico - San Juan	095
Brazil - Brasilia	112	Israel - Tel Aviv	020	Saudia Arabia - Jeddah	020
Manaus	110	Italy - Genoa	033	Riyadh	011
Rio de Janiero	115	Milan	032	Scotland - Glasgow	031
Sao Paulo	117	Naples	031	Senegal - Dakar	070
Canada - Calgary (Alberta)	021	Rome	032	Singapore	302
Edmonton (Alberta)	018	Jamaica - Kingston	104	Somalia - Mogadishu	019
Vancouver, (B.C.)	356	Japan - Fukushima	305	South Africa - Capetown	095
Goose Bay (Lab)	049	Kyoto	305	Johannesburg	074
Churchill (Manit)	032	Nagasaki	306	South Korea - Seoul	311
Winnipeg (Manit)	048	Okinawa Island	303	Spain - Barcelona	039
Gander (N.F.)	054	Osaka	305	Madrid	038
St. John's (N.F.)	055	Sapporo	309	Sri Lanka - Colombo	331
Halifax (N. Scot.)	062	Tokyo	303	Surinam - Paramaribo	100
Frobisher Bay (NWT)	033	Johnston Island	257	Sweden - Stockholm	019
Ottawa (Ontario)	062	Jordan - Amman	019	Switzerland - Geneva	033
Toronto (Ontario)	066	Kenya - Nairobi	033	Zurich	031
Quebec (Quebec)	060	Kuwait	009	Syria - Damascus	019
Prince Albert (Sas)	031	Laos - Vientiane	315	Tahiti - Papeete	210
Dawson (Yukon Ter)	344	Lebanon - Beirut	002	Taiwan - Taipei	306
Canary Islands - Las Palmas	058	Liberia - Monrovia	072	Tanzania - Dar es Salaam	034
Chile - Santiago	139	Libya - Tripoli	037	Thailand - Bangkok	011
China - Peking	318	Luxembourg - Luxembourg	031	Turk Islands	273
Christmas Island	231	Marianas - Guam	283	Tunisia - Tunis	036
Columbia - Bogata	130	Saipan	283	Turkey - Istanbul	022
Costa Rica - San Jose	119	Marshall - Kwajalein	265	United Arab Emirates - Abu Dhabi	004
Cuba - Havana	102	Mexico - Guadalajara	131	U.S.S.R. - Alma Ata	346
Czechoslovakia - Prague	026	Mazatlan	132	Irkutsk	333
Easter Island - Mataver	168	Merida (Yucatan)	111	Leningrad	014
Ecuador - Quito	123	Mexico City	126	Moscow	010
Egypt - Cairo	024	Monterrey	117	Novosibirsk	346
England - Birmingham	033	Tijuana	140	Vladivostok	313
London	033	Villahermosa	120	Uruguay - Montevideo	131
Plymouth	035	Midway Island	269	Venezuela - Caracas	104
Falkland Island - Stanley	145	Mongolia - Ulan Bator	329	West Germany - Berlin	025
Fiji Islands - Suva	236	Morocco - Casablanca	049	Frankfurt	029
France - Marseille	035	Nepal - Katmandu	334	Yugoslavia - Belgrade	026
Paris	033	Netherlands - Amsterdam	030	Zaire - Kinshasa	060
Germany - see West Germany		New Guinea - Port Moresby	263	Zambia - Lusaka	059

Year's Eve we spent quietly at home.

I have now been working for Hewlett-Packard for 15 months. I have learned quite a bit about signal generators and related test equipment and I am continuing to learn new things all the time. I have participated in some of the HP activities such as the division picnic, production line lunches, the Halloween party and several beer busts (root beer for me!).

We are pretty much settled in our new home. We have almost twice as much room as we had in Redwood City. I have two rooms - one a bedroom and the other room I have set up as my ham shack. We have 5½ acres so there is plenty of room for antennas.

I have joined two of the local radio clubs and I am getting involved with some of their activities. I am also a member of the Weather Warning System.

I wish you the best Christmas ever and a very happy 1982. (Same to you from all of us, Dave. Ed.)

P.S. The next time you go into Canada, come home Hwy 395 and you can talk to me on 2m instead of Jim, W7UDG, hi!

Catch you on the air sometime.

73

David, WB6JPH

MEMBER NEWS: Andy Korsak, VE3FZK, has taken the plunge and is in business for himself, developing business and mathematical applications software.

Andy's company is called "Go Forth", at 504 Lakemead Way, Redwood City, CA 94062, and his telephone no. is 415 366-6124. I am sure that we all wish Good Luck in this venture.

NEW MEMBER: Mark Schutzer, KA6RMA 2126 Hillcrest Road, Redwood City, CA. Tel. no. 415 366-2950. Mark

has a home-brew QRP rig and a Kenwood TR-2400.

A new member from December is: Wallace Dean, KA6JHO, 323 Bay Road, Menlo Park, CA. Tel. no. 415 323-4561. Wally is a commercial pilot and found so many friends in the club at the December meeting that it almost does not seem necessary to introduce him via PAARagraphs.

ERRATA: By accident, the author's name was left off that very fine article, "Viva The Auction". This article was written by the PAARA Historian, Jerry Zobel, W6ARA, and we look forward to other fine articles from the same pen.

CONTESTS: 1982 Novice Roundup, Jan. 30 - Feb. 7. Only 30 hours operating time. See the January QST for details.

International DX Contest, cw Feb. 20 - 21, phone Mar. 6 - 7. Details in the December QST.

Field Day. Just as the hibernating bears are slowly beginning to wake up, so are the club's Field Day team beginning to plan for their raison d'etre. Anyone who is unfamiliar with the club's Field Day effort, and who would like to help, should contact Fred Canham, K6YT.

NEW APPOINTMENT: Bill McElhinney, KA6LZI, is now handling the mailing of PAARagraphs, so contact him if you do not get your copy, hi!

I am sure that we all want to thank Ed Fairbanks, W6AIN, for handling the mailing for so long as well as handling the Raffle and the provision for refreshments at the meetings.

WANT ADS: ICOM 255A/E with scanning. Microphone HM-10. \$275.00 or best offer. Also, MIRAAGE B-108 "New" 2-metre Amplifier \$135.00.

Call for a package deal. Call Scott at 415 345-5591.

□ This Heathkit 75-Watt All-mode VHF Base Amplifier is great for use at home or for your repeater station.

\$279⁹⁵

- Work the ones you hear — 10 watts input produces a hefty 75 watts (nominal) out
- Makes a great repeater amp
- Rugged solid-state design
- Operates FM, SSB and CW

If your 2-meter transceiver has a hot receiver like the one on the VF-7401 (on page 13), you probably hear stations who can't hear you. The new Heathkit VL-2280 All-mode Base Amplifier will solve that problem for you, giving you a hefty 75-watt (nominal) signal for just 10 watts in. The VL-2280 even has a plug in the back to power your VF-7401 or other make transceiver, so you don't need a separate power supply. And if your club needs to update its old vacuum tube amplifier and replace it with solid state reliability the VL-2280 is an excellent choice for a repeater amplifier. It can be operated on 120 VAC, 240 VAC or even 12 VDC back-up battery power.

The **Hams at Heath** have engineered the new VL-2280 to operate in all modes, too — SSB, FM or CW. IMD products, incidentally, are very low when the amplifier is used on sideband. The VL-2280 operates across the entire 144 to 148 MHz amateur 2-meter band. Broad-band circuitry maintains a stable power output across the entire band, too. This big amplifier has extra-large heat sinks to provide more-than-adequate cooling, giving you a 50% duty cycle and more "on" time. And the VL-2280 has a convenient standby/on switch so the exciter can be operated barefoot!

The **illuminated front-panel meter** allows you to monitor drive power, power output or relative DC voltage. The VL-2280 is DC voltage regulated, by the way. This rugged amplifier features excellent harmonic rejection and RF-sensed or remote keying. To give you maximum receiver sensitivity, insertion loss has been kept to less than 0.6 dB. The extremely rugged design is housed in a military style cabinet measuring 6.25" H x 13.5" W x 12.25" D. Alignment requires only an exciter such as the VF-7401, and a wattmeter that reads forward and reflected power, like the HM-2141 on page 67. Building the VL-2280 75-Watt All-mode Base Amplifier is an enjoyable three-evening project.

40-Watt Amplifier increases your range on 2-Meters

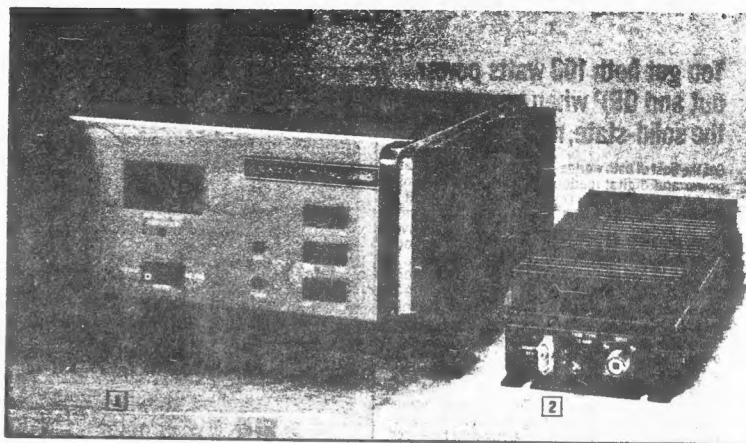
\$59⁹⁵

The **HA-202A 40-Watt Amplifier** increases 2-meter fun with a minimum 40 watts for just 10 watts in. Automatic T/R switching. Tuned input/output keeps spurs low. Special emitter ballasted configuration withstands VSWRs of up to 3:1. Internally adjustable for any 1.5 MHz portion of 143-149 MHz band. Alignment requires VTVM, wattmeter or SWR bridge. Requires 12-16 VDC power source like PS-1175 (right).

Kit HA-202A, Shpg. wt. 4 lbs. **59.95**
MDZ-63-3, 3 ft. Coax. w/conn's., 1 lb. **4.95**



Discover the fun of kitbuilding at your Heathkit Electronic Center.



Kit VL-2280, Shpg. wt. 30 lbs. **279.95**
MDZ-63-3, 3 ft. Coax. w/conn's., 1 lb. **4.95**

VL-2280 SPECIFICATIONS: Band coverage: 144 to 148 MHz. Power Input: 1 to 10 watts SSB, FM or CW. Impedance: 50Ω. Input VSWR: (@ 10 watts drive) 2.0:1 or less. Power Output: 75 watts @ 10 watts drive. Duty Cycle: 50%, 10 minutes on, 10 minutes off. Insertion Loss: (Antenna to Receiver) less than 0.6 dB. IMD Distortion: -24 dB. Power Requirement: 120 VAC at 4 amperes; 240 VAC at 2 amperes; 12 VDC at 11 amperes. Dimensions: 6.25" H x 13.5" W x 12.25" D.

□ The Heathkit VL-1180 75-watt 2-Meter Amplifier puts your mobile station in range of more repeater fun

\$139⁹⁵

- 10 watts in gives 75 watts out on FM, SSB or CW
- Features rugged, solid-state design for mobile use

You're driving down the highway and can hear a 2-meter station, but you can't work him. Then you switch on your Heathkit VL-1180 All-Mode, 75-Watt Mobile Amplifier. Your 10 watts in is trans-

formed into 75 watts of QSO-grabbing power...and you're in business!

The **VL-1180 Mobile Amplifier**, like the VL-2280 described left, has been engineered to operate in all modes — single sideband, FM or CW — across the entire 144 to 148 MHz 2-meter band. Power output is stable across the entire band, thanks to broad-band circuitry. And you get a 50% duty cycle for more "on" time because extra-large heat sinks provide more than adequate cooling. Insertion loss is less than 0.6 dB, and the VL-1180 boasts excellent harmonic rejection, plus RF sensed or remote keying. The Amplifier's rugged design means you can install it in your car's trunk or other out-of-the-way location without worry. The easy-to-build VL-1180 is a two-evening kit, and alignment is simple, too, requiring only an exciter and a dual wattmeter like the HM-2141. Get your VL-1180 today for more 2-meter mobiling fun.

Kit VL-1180, Shpg. wt. 5 lbs. **139.95**

VL-1180 SPECIFICATIONS: Band Coverage: 144 to 148 MHz. Power Input: 1 to 10 watts SSB, FM or CW. Input/Output Impedance: 50Ω. Input VSWR: (at 10 watts drive) 2.0:1 or less. Power Output: 75 watts (typical), @ 10 watts drive. Duty Cycle: 50%, 10 minutes on, 10 minutes off. Insertion Loss: (Antenna to Receiver) less than 0.6 dB. IMD Distortion: -24 dB. Power Requirement: 13.6 VDC (operates 11.5 to 16 VDC) @ 11 amperes. Dimensions: 2 1/4" H x 4 1/4" W x 10 1/4" D (6.3 x 11.8 x 26.7 cm).

AC Supply for your 2-Meter transceiver/amp combo

\$84⁹⁵

The **PS-1175** supplies the necessary voltage and current to power the Heathkit VF-7401 Transceiver/HA-202A Amplifier combination (or most other makes) from 120/240 VAC. Output voltage internally adjustable between approx. 12 and 14.5 VDC. Output current is 10 amps, intermittent, 10 minutes max. (5 amps continuous). Darlington circuit gives exceptionally high gain for excellent regulation. Fused for overload protection. Comes with 3-wire line cord. 5 1/8" H x 6 1/4" W x 11" D. As with all our kits, this one even includes solder.

Kit PS-1175, Shpg. wt. 15 lbs. **84.95**



10-Watt Amplifier gives your hand-held clout!

\$44⁹⁵

The **HA-201A 2-Meter Amp** will get your hand-held into your favorite repeater full-quieting every time, delivering up to 10 watts for a mere 1 1/2-watt in. Or 8 watts out for just 1-watt in. Great with the VF-2031, p. 58. Fully automatic operation with solid-state T/R switching. Tuned input and output for maximum efficiency, reduced spurs. Withstands infinite VSWR. Includes dummy load, RF detector. VTVM needed for tune-up. Requires 12-16 VDC power source. 2 3/4" H x 5 1/2" W x 5 1/4" D.

Kit HA-201A, Shpg. wt. 2 lbs. **44.95**



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